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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/536,637	03/28/2000	Hitoshi Nakano	684.2985	5659

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EXAMINER

CIRIC, LJILJANA V

ART UNIT

PAPER NUMBER

3743

DATE MAILED: 07/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/536,637

Applicant(s)
Hitoshi Nakano

Examiner
Ljiljana V. Ciric *LVC*

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on May 28, 2002
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-9, and 11-20 is/are pending in the application.
- 4a) Of the above, claim(s) 12-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-9, 11, and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on Apr 26, 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Continued Prosecution Application

1. The request filed on May 28, 2002 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/536,637 is acceptable and a CPA has been established. An action on the CPA follows.
2. Claims 1, 2, 4 through 9 and 11 through 20 remain in the application, of which claims 12 through 17 remain withdrawn from consideration for being drawn to a non-elected invention, wherein the election was made without proper traverse in Paper No. 7.

Response to Arguments

3. Applicant's arguments filed April 26, 2002 have been fully considered but they are not persuasive.

As a preface to the following traversal of applicant's arguments, the examiner hereby notes that the claims in a pending application should be given their *broadest* reasonable interpretation.

See In re Pearson, 181 USPQ 641 (CCPA 1974).

In response to applicant's argument that the applicant's claims distinguish from the *Endo* reference since the second heat exchanger as claimed in the instant invention "exchanges heat between a coolant and a supply of air", applicant is respectfully reminded that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). Also, "[A]pparatus claims cover

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what a device *is*, not what a device *does*. (Emphasis in original). Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). Thus, absent a recitation of distinguishing structure, little or no patentable weight is given to the functional limitations in the claims such as “for exchanging heat between the coolant and a supply of air supplied into said chamber” as recited in claim 1 on which applicant relies for patentability.

Contrary to applicant’s argument that “*Endo* is also not understood to provide a refrigerant circulating between the refrigerator and the first heat exchanger”, it is reiterated hereby that, although little or no patentable weight is given to such functional language, *Endo* clearly discloses first heat exchanger or cooler 20 as having a refrigerant 23 circulating therethrough.

In response to applicant's argument that the *Crawford* reference fails to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., an electric heater) are not recited in the previously rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Drawings

4. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on April 26, 2002 have been approved.

A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

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Specification

5. The use of the trademark “Flon” [page 6, line 11] has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Objections

6. Claim 11 is objected to because of the following informalities: the alternative pieces of equipment should be recited as a Markush group for improved clarity. Appropriate correction is required.

Claim Rejections - 35 U.S.C. § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. There is insufficient antecedent basis in the claim for the limitation “said first heater exchanger” as cited in lines 1-2 of the claim. Recommend replacing “said first heater exchanger” with “said first heat exchanger”.

9. Claims 1, 2, 4 through 9, 11, and 18 through 20 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap

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between the elements. See MPEP § 2172.01. The omitted elements are: the temperature sensor and/or some other temperature control means for ensuring that the electric heater is able to heat the supply of air at a predetermined temperature as recited in base claim 1.

Claim Rejections - 35 U.S.C. § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. As best can be understood in view of the indefiniteness of claim 4, claims 1, 2, 4, 5, 7 through 9, 11, 18 through 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Endo* (filed on March 28, 1997) in view of *Tyler* (both of record).

Endo discloses the apparatus essentially as claimed, including, for example: a chamber or enclosure 2 enclosing semiconductor manufacturing equipment or, more specifically, projection exposure apparatus 2A; a refrigerator or freezer 22 using a refrigerant 23; a first heat exchanger or cooler 20 for exchanging heat between the refrigerant 23 and the liquid coolant 4; a second heat exchanger or cooler 8 or 14; an air blower or fan 15; a temperature-controlled heater 7 or 13 for heating the supply of air at a predetermined temperature; temperature sensors 5 and 17 which are disposed inside the chamber 2 and which read on the measuring equipment as cited in claim 11; and, temperature sensor 11 which is disposed adjacent mask R and which reads broadly on the mask inspection equipment as cited in claim 19.

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While *Endo* does not specify whether temperature-controlled heater 7 or 13 is an electric heater or a heating heat exchanger, it is a well-known matter of design choice in the art of HVAC design to use either kind of heater in air conditioning systems and it is furthermore taught by *Tyler* to use an electric heater for heating the supply of air to a predetermined temperature in a controlled-environment test chamber in order to enhance temperature control of the supply air since the operation of an electric heater is generally more readily controlled.

Similarly, while *Endo* discloses the coolant as comprising a liquid, *Endo* does not specify, for example, the coolant as being water or a fluoride inert liquid or an anti-freeze liquid as claimed in the instant invention. Nevertheless, Official Notice is hereby taken that it is conventional to use any one of water, anti-freeze liquids, and fluoride inert liquids as coolants in air conditioners.

It would thus have been obvious to one skilled in the art at the time of the invention to choose, based on specific performance/design criteria, any one of a number of known coolants, including water or a fluoride inert liquid, in order to optimize the performance of the air conditioner under the expected operating conditions, for example. It would thus also have been obvious to one skilled in the art at the time of invention to have one of the temperature-controlled heaters 7 or 13 of *Endo* be an electric heater as taught by *Tyler* in order to facilitate the responsiveness of the heater to changes in temperature and thus to the specific heating requirements of the apparatus at any given time.

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12. Alternately for claims 1, 2, 4, 5, 7 through 9, 11, 18 through 20, claims 1 through 9, 11, and 18 through 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Crawford* in view of *Tyler*

Crawford discloses, essentially as claimed, an air conditioner for supplying conditioned air to a chamber or room 6. As in the instant invention, the air conditioner is disposed in space 7 which is adjacent to the chamber or room 6 and is operably connected with the chamber or room 6, with the air conditioner comprising a refrigerator (condenser 27, compressor 28, motor 29, refrigeration coils 26), a first heat exchanger or evaporator/cooler 33, a second heat exchanger which reads on reheating coils 45 or refrigeration coils 26, an air blower or fan 23, a heater which reads on reheating coils 45, a reservoir 10, and pump 14. Thermostat 47 reads on the measuring or inspection equipment as claimed. *Crawford* also shows the air conditioner to include two separate coolant circuits, with one circulating a coolant from the compressor 28 to the first heat exchanger 33 via condenser 27 and with the other circulating another coolant through the other side of the first heat exchanger 33 as well as through both of the air-to-liquid coils 26 and 45, each of which reads on the second heat exchanger as claimed. Applicant is respectfully referred to page 2, column 1, lines 38-66 for support.

Crawford, does not, however, specifically disclosing the chamber as enclosing semiconductor manufacturing equipment, nor the specific elements of this semiconductor manufacturing equipment. Nevertheless, as in the previous Office action, Official Notice is hereby taken that it is well-known in the art to use high performance air conditioning equipment during

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semiconductor manufacturing in order to facilitate obtaining more precise temperature control, and thus, for example, more precise alignment of the equipment with the wafers during the manufacturing process. For example, it is standard practice to use mask inspection equipment and laser interferometers with semiconductor manufacturing equipment such as semiconductor exposure equipment.

While *Crawford* also does not specify the heater as being an electric heater, it is a well-known matter of design choice in the art of HVAC design to use either kind of heater in air conditioning systems and it is furthermore taught by *Tyler* to use an electric heater for heating the supply of air to a predetermined temperature in a controlled-environment chamber in order to enhance temperature control of the supply air since the operation of an electric heater is generally more readily controlled.

It would thus have been obvious to one skilled in the art to modify the air conditioned chamber and air conditioner of *Crawford* so as to specifically utilize the same in conjunction with semiconductor manufacture, for example, in order to better control atmospheric conditions during the process and thus minimize defects. It would thus also have been obvious to one skilled in the art at the time of invention to have the heater of *Crawford* be (or be supplemented by) an electric heater as taught by *Tyler* in order to facilitate the responsiveness of the heater to changes in temperature and thus to the specific heating requirements of the apparatus at any given time.

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Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ljiljana (Lil) V. Ciric, whose telephone number is (703) 308-3925. While she works a flexible schedule that varies from day to day and from week to week, Examiner Ciric may generally be reached at the Office during the work week between the hours of 10 a.m. and 6 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett, can be reached on (703) 308-0101. The fax phone number is (703) 305-3463.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.


LJILJANA CIRIC
PATENT EXAMINER

eb:LVC

July 27, 2002